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Attached for your retention is a translation of a Czech-language report containing a manual on mines and mine laying. This manual was prepared by the Czech Army Engineering School at Litomerice during 1948-49 upon orders of the Ministry of National Defense. [redacted] 25X1X 25X1X

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MINES AND MINE-LAYING

(Final proposals on regulations for Czech. Engineer Corps concerning corrections and supplements from Sept. 1948 to July 1949 prior to dispatching for final approval.)

Author: Staff Captain of Engineer Corps Josef Bruza, Commander of the Demolition Group of the Engineer School in Litomericich.

CHAPTER I

The introduction describes mines, detonators, and mine fields of universal importance and use.

Article 1.

Mine detonators:

1) Mechanical:

a.) with instantaneous action

(aa) on pull: like the types used in German detonators. ZZ-35 explains function

(bb) on pressure: German S-Mi-35, Russian MV-5, German T-Mi-Z-42

(cc) on pull and pressure: German ZZ-42, German S-Mi-Z-44

(dd) on pressure and free: German T-Mi-Z-43

(ee) on release of pressure: British booby trap (No.3)

(ff) electric primers: British No. 6, Russian percussion primers

b.) with delayed action: British No. 9

2) Mechanical-chemical: with instantaneous action, German SF-1

3) Chemical: with delayed action: German CMZ-41, British No. 10.

4) Electric primers: with delayed action: Russian ECHV, ECHZ, ECHP.

5) Clockwork: German J.-Feder-504

Article 2.

Antitank Mines:

These mines consist essentially of a case, explosive charge, and detonating mechanism.

1.) metallic mines: German T-Mi-43

2.) wooden mines: Czech. PT-Mi-D, Russian TMD-B

3.) mines of artificial materials: [illegible] Russian TMB-D (paper).

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1) underfoot-type mines: Czech wooden PP-Mi-D

2) fragmentation mines: German STC mine, Russian POMZ.

3) shrapnel mines: German S-Mi-35

CHAPTER II

Laying Individual-Type Mines:

1) As subterranean mines: arrangement of the bed, setting the mine (arming), camouflaging, disarming, (~~releasing safety device~~).

2) As surface mines: fastening the mine, detonation, camouflage (covered with undergrowth), snare wires (one-sided 7.5 meters: if they are more than 5 meters beyond the supporting stakes, two-sided 15 meters).

3) Mine system: mines, explosives, artillery ammunition: detonation--instantaneous or delayed.

CHAPTER III

Mined Areas:

Tracing tape (fabric 3-5 cm), winch with a drum, fastening pins, PT (antitank) marking cord, PT with a simple marking cord, PP (antipersonnel) marking cord, triangular marking cord and normal means for conducting field measurements.

CHAPTER IV

1) The mine field protection shall be carried out on a localized basis and the units shall plant the mines themselves.

2) The mine field protection shall be laid out in connection with the whole defense system and the planting shall be carried out exclusively by engineer units within the framework of divisions and larger units.

Article 1.

Mine field protection:

1) The planting of an antitank mine field in smooth overgrown terrain as a direct threat to the invasion of enemy tanks ((by skirmish line method): commander of the planting operations, plotter, No. 1 and 2, 2 groups of planters (7 men each).

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The Commander (if this has not been already done) shall fix the course of the forward boundary of the mine field. After the men become familiar with the situation, No. 1 shall take the position at the far end of his guide line. No. 2, in parallel with the forward lines (perpendicular to the guide line) shall pace out 45 paces. After the first 3 paces, he shall either halt or signal by hand. This position will always be taken by the first mine planters of the first and second squads. The other planters shall take up positions further along (6 paces), each shall put 2 mines in readiness, and shall wait for the signal. No. 1 and 2 then, simultaneously, go up to the main boundary marker (HM). Here, they will drive in stakes and proceed farther along the guide line. Nine paces beyond the HM they shall drive in additional stakes which will mark off the nearest row of mines. Thereafter, at distances 8 paces apart, the third, second, and first row of mines are marked in the same manner. Care should be taken to see that they always maintain the same distance between themselves, i.e., 45 paces. On the last row they shall halt, and either they or the commander shall give a signal to the first squad of planters who are approaching in dispersed skirmish order. All planters shall secure weapons on their backs. According to the situation and terrain, the approach shall be made either by crouching or crawling. As soon as they reach the level of No. 1 and 2, they shall stop and shall endeavor to keep 6 paces apart. The first planter shall be only 3 paces from No. 1. No. 1 and 2 shall then line the planters up (by orders, signals, and also with lights at night) and each planter will insert and set one mine. As soon as he completes the work on the first row of mines, he immediately back-tracks 8 steps to the second row. As soon as all the planters leave the first row, No. 1 and 2 shall drive in the markers to the level of the terrain and also shift to the second row. Here, they shall again line up all the planters who will then take 3 paces to the right, so that the first planter will now be 6 paces from No. 1. Here, they will insert another mine. After completing the work they shall return

to the starting point and the second team shall move out, each planter again carrying 2 mines. The first planter shall be 3 paces away from No. 1 on the third row, while the last planter shall be 6 paces from No. 2.

They shall then insert one mine and return to the fourth (i.e. last) row where they shall fall in and shift 3 paces to the right, so that the first planter is 6 paces from No. 1 and the last planter, 3 paces from No. 2. After completing the work on the fourth row, all hands shall return to the starting position or assembly point.

Figures 1 and 2

The whole group carrying out the mine planting shall be protected during this operation by the fire laid down by special units.

For this type of mine field "a record of the mine field" is not required, only a field sketch. Also, this mine field shall not be relayed to other units. The unit which planted this mine field must again, before its departure, remove the mines, if this has not already been done previously. The primary motive for this is that the HM (bench mark) does not have to be tied in with an orientation point drawn on the map, but only with an easily sighted point on the terrain which has been drawn on the field sketch and which is known to the members of the planting group.

If insufficient time is available before the enemy tanks attack, the mines do not have to be inserted fully but instead can be concealed by grass, leaves, etc.

2) The planting of antitank mine fields with a PT simple marking cord:

Means: PT simple marking cord, 2 guide-line cords.

The formation of the marking and planting groups shall be the same as in case 1.

The commander shall again designate the main boundary mark (bench mark) through No. 1 and the direction of the mine rows. No. 1 shall hold the PT simple marking cord as a marker which will indicate the beginning

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of the first row of mines, while No. 2 unwinds the cord and goes in the direction of the other rows of mines. When the cord is unwound No. 1 and 2 will move in the direction of the guide line until they reach the spot where the bench mark is to be established. The direction shall be checked again at the spot where the HM (bench mark) stake is to be driven in, then the cord or cable which forms the guide line shall be fastened and No. 1 and 2 shall proceed to the end of the guide line where they will drive in stakes marking the rear limit, i.e., the first row of mines. Here, they will give a signal to the planters. The latter shall be dispersed at the assembly point. The first squad will move out first, with the first planter in the lead (3 meters from the guide line) and the other planters at 6 meter intervals. As soon as the first planter reaches his mark he shall begin inserting the mine without waiting for the other planters as was done in case 1. The mine shall be inserted close to the cord and after completing the work he shall fall back 8 meters to another row, i.e., to another marker on the guide line. He does not have to drive in a stake here because during emergency removal of the mines the beginning of the rows will be indicated again by the marks on the guide line. No. 1 and 2 will shift the cord 1 meter to the right for the second row and the planters of the first squad will insert the second mine in this spot. After completing this operation, they shall return individually to the starting position from which point the second group of planters shall move out, again with two mines, in order to reach the cord which No. 1 and 2 have moved to the third row of mines and shifted 3 meters to the right, so that the first planter shall proceed to a spot 7 meters from the left side of the guide line.

• The second squad shall again insert one mine and fall back 8 meters, the cord will be shifted 1 meter to the right (the first mine in the row will now be 8 meters to the left from the guide line) and the second mine shall be inserted. The squad shall then return to the starting position or to the assembly point. No. 1 and 2 will drive in the remaining

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stakes to the level of the terrain, wind up the guide line and cord, whereupon the planting will be completed.

Figures 3 and 4

The field sketch and transmittal shall be as in case 1. If other fields are to be established adjacent to the given mine field, the procedure shall consist of holding No. 2 on his guide line as is and shifting No. 1 to the right to the new guide line. The operation shall be carried out as in the preceding case:

Article 2

Mine field protection:

1) Planting a PT (antitank) mine field by the step method (viz. English method).

Figure 5

2) Planting a PT mine field by marking cords (viz. Russian method). Both methods agree to the smallest modification, and the only differences are some of the numbers in the planting groups.

Figure 6

3) Planting a PP (antipersonnel) mine field: the mines shall be planted by engineer units in terrain where there is no danger of tank attacks, only as a defense against infantry. The density of the mines shall be 3 mines per running meter, therefore a PP mine field will comprise at least 6 rows 2 meters apart, and 2 meters between the mines (?)

The composition of the marking group: commander, plotter, No. 1 and 2, stakes and tape, No. 3 and 4 PP marking cord, No. 5 and 6 two tapes with reel. There shall be two groups of planters, each with 5 men.

The first group of planters shall proceed to the marked out mine field along the guide line up to the extended cord, the first planter shall count off 5 marks on the cord, stop at the last mark and start to insert the mines. The other planters shall also count off their 5 marks and start working as did the first planter. When the planter has inserted all 5 mines he shall remove himself by the shortest possible route to the

supply point on the forward (?) side of the mine field where he shall prepare another 5 mines. During this period, the second squad shall work in a similar manner on a second row of mines where the marking cord has been shifted either to the left or right so that the mines will be in a checker-board pattern. The work on the third, fourth, fifth and sixth rows is similar. If the mine field is to be extended farther (if it is longer than the length of the PP marking cord) No. 1 shall shift to another auxiliary guide line, while No. 2 remains as is. The mines may be planted to a distance of 1 meter from the guide line. Also, a safety zone 1 meter wide will be created on either side of the auxiliary guide line. At the same time, a safety zone 2 meters wide will be formed on the near side of the mine field. Only the guide lines and inside border shall be marked off with the tracing tape. The stakes marking the guide lines and the rows of mines shall be driven in to the ground level. The orientation points must be clearly visible (either natural or artificially established) and tied in with the main orientation point.

Figure 7

4) Mixed mine field:

a.) PT mine field protected by several rows of PP mines (rows and individual mines 2 meters apart).

b.) PP mines in various dispositions within the PT mine field. However, the PP mines should not exceed 10% of the number of PT mines, so that the effectiveness of the PT mine field will not be lowered. (The PP mines must be drawn first on the mine field report).

c.) In PT mine fields planted by means of guide lines, it is permissible to also plant rows of PP mines between the rows of PT mines, 15-30 meters apart.

5) Dispersed mines:

To be used in places where compact mine fields cannot be used advantageously and where the terrain cannot be effectively strafed (dead terrain).

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Individual mines shall be tied in with some orientation point or directly on the HCB (main orientation point) which is drawn on the map.

Most of these mines shall be secured against lifting in order to make it impossible to remove them noiselessly. The demarcation of these places is similar to that of mine fields.

CHAPTER V

Mining communications:

Contents of text: the importance of communications for rapid advance under present-day technical developments; when communications are hampered mobility in the field is substantially lowered, and some vehicles are completely immobilized.

Article 1.

Mining railroads:

Individual, without definite instructions (preferably metallic mines, percussion primers, mine system preferably in trenches (?), heavier preparation of the railroad supporting and underlying structrue). Railroad buildings, if the village is to be mined; the incoming routes and marshalling yards, if communications are to be mined: booby traps may be inserted in signalling devices, etc.

Article 2.

Mining highways:

1) For defense: the density of mines for road barriers shall be 3 mines per running meter. The mines shall be 2 meters apart with the assumption that they will explode from the first mine brought into action by detonation pressure. The barriers shall be constructed in places where the surrounding terrain is impassable and where it would be difficult to go around them. (highways in hillsides, edge of a wooded area, water obstacles). If such terrain is not available it will be necessary to construct flanks which, for such an obstacle, run out 100 to 150 meters in the field, and in some cases to a normal mine field. These flanks must be so inclined as to permit covering by fire from our own positions.

Figure 8.

To make it impossible to divert or turn the vehicles on the roadway, only the middle part of wide roads shall be open, while the sides shall again be mined in a rearward direction for a distance of 30 paces.

2). Mining highways for retreating: This shall be carried out by means of a triangular cord 50 meters in total length along which 7 mines are placed at such a distance from each other that they will not explode from the detonation pressure. Sectors 150 to 200 meters long are mined at fixed distances also of 150 to 200 meters. The planting is carried out in a direction away from the enemy. The mines in this case are less densely placed and are arranged in a nonuniform pattern. It is also advisable to substitute some PP mines (10%) for PT mines. The individual triangles shall be established in different geometrical positions by shifting their apexes and bases around. The last base is placed on the orientation point.

Figure 9.

CHAPTER VI

Mining villages:

Individual booby traps shall conform with the prescribed method of planting and disarming. They should be prepared with special care paid to concealment so that no signs are left behind which would reveal the presence of the trap. The map of the mined area must show free access to the trap and the method of arranging the removal of the mines when necessary. Traps in rooms shall always be placed by only one engineer; at no time shall two of them work in adjacent rooms, nor shall they be interferred with in any way.

General: traps in villages contribute to an increase in nervous tension in the area taken over. If new type traps are used, it is necessary to provide them with devices which will make it impossible to disarm (remove) them. Approach routes and assembly points in villages shall be mined with PT and PP mines by the current method.

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CHAPTER VII

Means for removing mines:

Tracing tapes, cords--as in mining and removal of mines in our own mine fields, in accordance with the record of the mine fields. Mine prod, mine detector, narrow tracing tape, mine marker, short tracing tape (8 meters long, 2 cm wide, of 0.5 metallic paper-weight so that its accuracy will be preserved in dragging it over the terrain). A chart for marking the passages, colored lights (yellow, green, blue).

CHAPTER VIII

Reconnaissance of mine fields:

Contacts with the enemy shall be carried out only in night reconnaissance patrols by 1 - 3 line officers. In interconnected mine fields, patrol ~~bands~~ units shall operate 300 to 400 meters apart.

Equipment:

Commander: compass, pistol, mine prod, pliers, wire, hand grenades.

No. 1: mine prod, pistol, pliers, wire, mine markers, winch with cord.

No. 2: mine detector, mine markers.

No. 3: self-igniting charges, hand grenades, reserve mine prods, wire, pliers, mine markers.

The work of reconnaissance patrols:

Reconnaissance patrols must operate as noiselessly as possible (rubber shoes, without helmets), avoiding contact with the enemy. Pains should be taken to assure that their work will be done in complete secrecy to avoid divulging that a passage is to be opened later. Their mission shall be carried out after a decision has been made by the commander in the divisional cadre and higher units as to where mine fields are presumed to exist, or where they may be found on the basis of various indications (the enemy is reconnoitering the same area and during machine-gun fire some mines are exploded, etc.).

The reconnaissance patrol shall work either by drawling and kneeling or by crouching if the terrain permits it. During the day, insofar as possible, all personnel shall become familiar with the terrain, the initial point shall

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be designated, as well as the advance points for further orientation at night. They shall move out when full darkness sets in and, where practical, one night shall be allowed for their work. During their return, they shall designate, by markers on the cord, the approximate forward and rear boundaries of the enemy mine field and the kind of mines used, and in some cases, the method of planting, also.

No. 1 will be the leader, and shall maintain the proper line of advance of the mine prod on the winch tape, and check the terrain to a width of 1 meter. The detected mines shall not be disarmed, only uncovered and marked.

Commander: checks the line of advance, and directs the work and speed of advance of the whole patrol. He shall disarm the mines found by No. 1, but does not lift them out. Then, on the return trip, he shall take back any mines of an unknown type for investigation, and shall cover the remaining mines.

No. 2: shall again check the terrain with a mine detector and shall mark any additional mines discovered. Then, he shall uncover and disarm these mines.

No. 3: shall relieve No. 1 after 20 or 30 minutes.

If the patrol does not discover any additional mines and it can be assumed that the mine field has been passed through, it shall return, with No. 3 coming first, then No. 2, and finally No. 1 who shall wind up the cord. The commander shall be the last to return to make certain that no traces are left of the work and that the mines of unknown type have been disarmed and lifted out, and shall determine the nature of the documentary proof to be submitted with the reconnaissance report, which shall contain:

sketch of location showing the line of advance of the reconnaissance patrol, the time of departure and return, designation (in meters on the cord) of all mines discovered, any obstacles encountered and how they were broken up, simple statement on materials which would facilitate the clearing of a passage.

CHAPTER IX

Clearing a passage: passages in enemy mine fields shall be established after prior reconnaissance, so that the mine removal squad will not have to patrol a long strip of ground unnecessarily. Passages shall serve for rapid penetration by the infantry and tanks of enemy mine fields. If passages have already been established and marked in our own mine fields, the passages in the enemy fields will be extensions of our passages. The passages shall not be broken or bent; it shall be an accessible route which is, insofar as possible, free of obstacles and is passable both on foot as well as in vehicles. The penetration through the passages must be as rapid as possible, again dispersed in some manner along the abandoned passage in order to prevent avoidable losses, since the enemy can open fire on the passage in a short time.

1) Passage for infantry:

Figure 10.

Width 7.5 meters, formation: commander and 9 men (7 prodders, 1 with a mine detector, 1 assistant). No. 1, 2, and 3 have short tracing, No. 4 and 5 narrow tracing tape (for marking off the passage), No. 6 and 7 check the safety zone (1.5 meters), the mine detector is used to check the whole terrain, the assistant locates the marked and uncovered mines and removes them to the safety zone. Mines which are secured against lifting, which would be dangerous to lift out, shall be attached by an anchor and cable and, just before the preparatory machine-gun fire, shall be exploded. Everyone should be armed and the work shall be carried out in absolute silence, avoiding contacts with the enemy.

Reserves: if insufficient engineers are available, the reserves shall be made up of personnel from the infantry who, before the operations begin, shall be familiarized with the work and, at the same time, the squad opening up the passage will familiarize them with the terrain for work at night.

Mission of reserves: the reserves shall demarcate the opened passage at a sufficient distance from the forward groups to avoid interfering with

[redacted]

their work. However, they must be in constant touch with them in the event that unexpected obstacles arise. The stakes to which is attached the barbed wire marking the passage opening shall be 1.5 meters high or lower, according to the nature of the terrain. If combat silence prevails, they should not be driven in with mallets but, instead, shall be inserted into excavated holes. They shall be 3 to 10 paces apart up to a single-walled barricade if further work has to be delayed (i.e., if the passage has not been fully extended).

During the period of silence, while the first group is starting its work, the reserves shall check the terrain between our own and the enemy mine fields to determine whether scattered mines have been planted there. The reserves shall replace any men lost in the teams opening up the passage.

2) Passage for tanks:

Figure 11.

Two squads: the first shall open up the passage area with the same formation as for the infantry passage except that No. 6 shall put down the narrow tracing tape (rather than No. 4); also, the safety zone on the left side is not, for the time being, left behind. The second team works at a safe distance 50 meters behind the first group. The functions of the individual Nos. are similar to that for the infantry passage.

3) Enlargement of the passages:

Figure 12.

4) Demarcating passages and mine fields:

The mine field shall be demarcated by a single-walled barricade which follows the outline of the mine field. A red triangle 15 cm on a side shall be placed at 25 meter intervals. The passages shall also be demarcated by a single-walled barricade, with large white-red charts and lights (green and red) at 50 meter intervals, and small white-red charts without lights at 25 meter intervals.

The approach route shall be marked with green straw, and blue lights at night. Red lights will not, generally be used in order to prevent their being mistaken for vehicle lights.

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Figure 13.

CHAPTER X

Area removal of mines: is carried out by a squad of engineers in the same formation as for passages. As a rule, the work shall be carried out by enlarging the passage on the left side to the end of the mine field toward another passage. If the mine field is very narrow, the removal of mines can be carried out by having the mine removal squads proceed in parallel with the forward boundary, which makes it possible to put in a greater number of squads, provided that the prescribed safe distance of 50 meters is maintained.

Figure 14.

Mine removal in enemy antipersonnel mine fields shall not be carried out by hand but instead, by mechanical means.

CHAPTER XI

Article 1.

Removal of mines from railroads:

The instructions do not call for any precise formation; the check shall take place primarily by sight (rails make it impossible to use mine detectors, while gravel prevents use of mine prods). The search should be concentrated in places where the gravel layer on the surface has been disturbed; bridge passes, etc. should be checked, and finally, the test engine shall be run on the tracks after the whole sector has been checked.

Article 2.

Removal of mines from highways:

1) only for motor vehicles: only the roadway and raised footways shall be checked; the roadway check shall be done primarily by sight; each man shall check a strip 1.5 meters wide. This group will advance comparatively rapidly, therefore the men removing mines from the footways must be relieved frequently, or organized into 2 groups. These men will then be followed at a distance of 50 meters by 2 assistants who shall disarm the mines discovered and marked, lift them out, and set them on the footway.

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The assistants shall be followed by a vehicle with supplementary materials, reserves, and a steel cable 50 feet long for removing road blocks. The blocks should never be dismantled by hand (possibility of concealed booby traps and mines), but instead shall be removed by cables. The technical group will follow next at an adequate distance behind and will restore the highway once more for vehicular traffic. Their mission, before commencing work, shall be to check the sides and bottom of all craters (shell holes) to prevent unnecessarily endangering the workers who will fill in the craters and holes left behind when mines have been lifted, ~~lifting mines out~~, etc. For this purpose, the group shall be equipped with ground tools, sufficient stock of wood for bridging large craters, and also road-repair machinery, if required.

Figure 15.

2) Removal of mines from highways for infantry and semi-mobile troops:

The removal of mines shall be carried out on both the roadway and the immediate vicinity of the highway, i.e., at least the footways and ditches. The first echelon shall remove mines from the roadway and will include 2 assistants and a vehicle with a 50-meter cable. The second echelon shall remove mines from the footways and ditches (2 groups of 3 men and 1 mine detector), 2 assistants 50 meters away. If a still wider strip around the roadway must be checked, it will be necessary to reinforce the mine removal echelon, or to put in 2 new mine removal groups working independently of the second mine removal echelon. Then, the technical group will follow again and carry out the same work as in the preceding case.

All the mines which can be lifted out shall be placed on the edge of the roadway, or else they can be used again, or destroyed by exploding them, usually in holes about 100 meters away from the highway.

In a division sector, there must always be at least one highway passable for heavy division vehicles. Highways which have been checked and cleared of mines shall be marked by signs "Highway cleared of mines in the sector--------" with the signature of the commander of the mine removal groups.

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Figure 16.

Mine removal in villages:

The removal of mines from highways and open areas in villages shall be carried out in the same way as in the case of communications and mine fields. The most difficult task is to check for booby traps in buildings. The advance into suspected buildings shall be preceded by a check of the approaches and surrounding area of the building. The first person to enter the building shall be the commander with a plotter and assistant. In general, entrance shall not be made through the door nor even the windows on the ground floor, unless necessary (2nd floor windows and, in some cases, through the roof).

The route which is selected shall be marked by a continuous chalk line and, at the same time, a small plan shall be obtained of the building for the advance of further mine removal parties. After they cover the corridors and stairs of the building, they shall leave by the same route they came in. Then, the mine removal plan shall be made up (where the work will be started and the method to be used). The engineers carrying out the mine removal work shall always work one to a room, while the others shall work several rooms apart. They should be dispersed as much as possible in order to avoid interfering with each others work. After each 5 or 10 minutes of work, a rest period shall be taken in order to permit full concentration on the further work.

Procedure for removing mines:

The floors shall be checked first, followed by the walls, then tables, closets, and finally the remaining furniture. They should not check the electric lines; this will be done by special details trained for this purpose, and only upon higher orders.

Each man who has checked a room shall so indicate by means of his chalked symbol on the door, and shall carry full responsibility that the room has been cleared of mines and booby traps.

In the mine removal plan, the engineers who worked on the objective

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shall be listed in the introduction.

CHAPTER XIII

Evidence of mine fields.

CHAPTER XIV

Precautionary measures.

Czechoslovak Wooden Antitank Mine. (PT-Mi-D).

Description:

1) Body - housing mine (dimensions 14/22/34 cm).
2) Pressure slat
3) Pressure blocks
4) Base blocks under the detonators
5) Shearing pegs (6 mm dia.)
6) Locking wedges
7) Cotter pins (metallic 2 mm dia.)
8) Starting charges (200 grams)
9) Explosive charges (1 charge 2.8 kg, i.e., 14 200-gram charges)
10) Apertures for securing the mine against lifting out
11) Detonator compartments

Method of Adjusting (Arming).

A live mine during shipment includes, besides the attached parts: 2 locking wedges and 2 starting charges of 200 grams. This type of mine is opened by pulling out both cotter pins and taking out the pressure slat. Then, the wedges and starting charges located inside are taken out.

Two RO-1 (ZZ-42) detonators, after being fitted with detonating caps, are screwed into the starting charges. The units are then reinserted in such a way that the pressure arm of the detonator plug will be located under the pressure block. The locking wedges are inserted in the gap between the starting charges, thereby packing the charges--wedging them in. The mine is closed, after insertion of the pressure slat, and secured by means of the cotter pins. The mine is now ready for planting and detonation.

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~~and the detonator is armed~~. When a vehicle goes over it, or a pressure of at least 150 kg. is brought to bear on it, the pressure is transmitted from the pressure slat to the pressure blocks which will drop downward when the pegs are sheared off, thereby dislodging the plugs with the extended firing pins. The latter are thus released and thrown by spring action against the primers which causes the detonating fuzes for the starting charges to go off, thereby exploding the main charge.

Securing a mine against lifting out:

Before the mine is inserted into the bed, a piece of thin binding wire is pushed through an opening in the bottom of the mine with one end attached to the lug on the detonator plug in such a way that a piece of wire about 40 cm long remains free. The detonator, which is connected to the starting charge, is then inserted into the mine and the wire passing through the bottom is gently drawn taut. The other end (40 cm) must, however, be firmly secured so that the plug will not be pulled out when the wire is being pulled through the opening. The mine is then inserted in the bed and the wire is securely attached to a peg driven into the bottom of the bed. The free end (40 cm) is held steadily. Finally, when the mine is packed with earth up to its top surface, the free end of the wire is placed inside, and the mine is closed and covered.

A proposed device to prevent disarming ~~for protection against accidental~~ PT-Mi-D mines:

Eng. Staff Capt. Josef Bruza. The demonstration model was developed by Platoon Officer Candidate Vaclav Novotny. In June 1949, the device was demonstrated by Capt. Bruza to a commission from the Officers' Military Technical Institute and the Chief of Staff (Commander of Engineer Troops) where it was enthusiastically received.

Preparation of the mine: the pressure block is taken out (by knocking out the shearing pegs), and the weakly fastened base block is taken out of the bottom. The pressure block is cut down on the left side about 4 mm, and the base block also 4 mm, but it is not necessary to cut down the whole side, only its upper part where the tie rod of the device fits in. The pressure slat must be accurately cut out (viz. end. 17) so that even if the pressure slat is lift[redacted] only slightly, the device

will operate reliably.

The base block is again fastened to the bottom while the metallic device is placed on the bottom without attaching it. The last unit to be inserted is the pressure block which, by means of the driven-in shearing pegs will prevent any movement of the structural parts of the device. A thin string is ~~stuck through~~ looped around the hook on the rod and both ends are then inserted through the holes for the cotter pins. The tie bar is then pulled back up to the vertical wall and the detonator unit and starting charge are carefully inserted. The hook on the detonator plug must then be inserted under the bent extension of the tie bar, the second starting charge and detonator are inserted, and the wedges on both charges are unfastened (sic). Finally, the pressure slat is inserted. The free hand is pressed downward and the string holding the tie bar is allowed to slacken a trifle to ascertain whether it has caught on the notch of the slat. If the slat is held permanently, the string is then pulled out and the slat is secured with the cotter pins. The mine can now neither be opened nor disarmed.

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